

FURTHER NOTES ON *PROTEA* IN SOUTH AFRICA

J. P. ROURKE

(Compton Herbarium, Kirstenbosch)

ABSTRACT

Three new species, *Protea nubigena* Rourke, *P. piscina* Rourke and *P. inopina* Rourke, as well as two new subspecies, *P. longiflora* Lam. ssp. *potbergensis* Rourke and *P. roupelliae* Meisn. ssp. *hamiltonii* Beard ex Rourke, are described.

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Drie nuwe spesies, *Protea nubigena* Rourke, *P. piscina* Rourke en *P. inopina* Rourke asook twee subspesies, *P. longiflora* Lam. ssp. *potbergensis* Rourke en *P. roupelliae* Meisn. ssp. *hamiltonii* Beard ex Rourke, word beskryf.

In concluding the groundwork towards completing a revision of *Protea* in South Africa, it has been found necessary to describe certain additional taxa. This is the final contribution in a series of miscellaneous notes published preparatory to the appearance of a revision of the South African species of *Protea*.

Protea nubigena Rourke, sp. nov.; a habitu brevi ramosissimo, inflorescentiis parvulis, stylis 35–40 mm longis, foliis oblanceolatis vel ellipticis glabris glaucescentibus 40–60 mm longis 7–14 mm latis, distinguitur. Crescit scopuli graminei verticales ad 2 300 m supra mare in Dracomontes.

Fruticulus ramosissimus, 0,5–0,7 m altus, caulibus a caudice exorientes. *Caules* ramosissimi, 2–5 mm in diam., nudi, sed foliis aggregatis apices versus; rami cicatricibus foliorum delapsorum notati. *Folia* ascendentia, oblanceolata vel elliptica, 40–60 mm longa, 7–13 mm lata, glauca, glabra; apices obtusi. *Inflorescentia* globosa, 40–50 mm in diam. *Receptaculum* conicum, acutum, 10 mm latum, 10–12 mm altum. *Bractee involucales* 3–4 seriatae, eburneae vel roseae soridae, glabrae; series intima oblanceolata—linearia, 25–30 mm longa, 3–7 mm lata, apices rotundatos concavos; series externa lata ovata 10–15 mm longa, 10 mm lata, margines brunescens. *Perianthium* 30–35 mm longum; tubus glaber extus sed marginibus interioribus distalibus setosis; unguis et limbi setosi sparsi, indumento fulvo. *Stylus* 35–40 mm longus, arcuatus adaxialis, albus. *Stigma* peranguste linearie, 10 mm longum roseum.

An erect, much branched shrublet 0,5–0,7 m in height, to 0,5 m in diam., with numerous 10–15 mm diam. stems arising from a subterranean caudex, very

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occasionally with a short single main stem to 20 mm in diam., swollen at base to form a bulbous caudex. *Stems* highly branched, woody, 2–5 mm in diam., with short (20–50 mm) growth increments; glabrous, covered with dark verrucose bark; leaf scars prominent; bare of leaves except for ultimate and penultimate growth increments. *Leaves* erect, ascending, oblanceolate—elliptic, glaucous, glabrous, 40–60 mm long, 7–13 mm wide; apices obtuse, margins distinct. *Inflorescence* globose, 40–50 mm in diam., surrounded by several axillary shoots. *Receptacle* conic, acute, 10 mm wide 10–12 mm in height. *Involucral bracts* 3–4 seriate, greenish cream to dirty pink, glabrous; inner series linear-oblong 25–30 mm long, 3–7 mm wide, apices rounded, slightly concave; outer series broadly ovate 10–15 mm long, 10 mm wide, margins brown. *Perianth* 30–35 mm long, slightly adaxially curved; tube region 10 mm long, glabrous externally but inner margins densely setose distally; claws sparsely setose with a ferruginous indumentum on inner and outer surface; limbs 10 mm long, apices sharply acuminate, outer surface sparsely setose with a tawny ferruginous indumentum. *Anthers* 4, subsessile, 5–6 mm long, filaments 1.5 mm long. *Style* 35–40 mm long, adaxially curved, tapering subterminally, white. *Pollen presenter* very narrowly linear, simple, scarcely differentiated from style, 10 mm long, pink. *Ovary* obconic 5–6 mm long, covered with long, straight, tawny trichomes. *Hypogynous scales* lanceolate, acuminate, 1–5 mm long.

Type: Royal Natal National Park above Policeman's Helmet Ridge on vertical cliffs of south-east aspect, facing Tugela Gorge, on the ridge leading to The Witches, 2 300 m (7 600 ft), 4/4/1978, J. P. Rourke 1635 (NBG, holo!; PRE, NU, J, BOL, K, MO, S and in herb. Royal Natal National Park Mont-aux-Sources, iso.).

Protea nubigena may be distinguished from all other *Protea* species of the summer rainfall region of South Africa, on account of its dwarf, highly branched growth habit, the very small inflorescences and flowers (styles 35–40 mm long), and the small, oblanceolate, glabrous, glaucescent leaves 40–60 mm long, 7–14 mm wide.

A most remarkable species presently known from a single locality in the Natal Drakensberg within the Royal Natal National Park where it grows on vertical cliffs and ledges at an elevation of 2 300 m (7 600 ft), on Basalt lavas of the Stormberg series. The associated vegetation consists of coarse turf composed of *Heteropogon contortus* and *Themeda triandra* with *Buchenroedera lotononoides*, *Cliffortia browniana*, *Helichrysum sutherlandii* and *Talbotia elegans* being the other predominant species on the ledges.

SPECIMENS EXAMINED:

NATAL—2828 (Bethlehem): Natal National Park, Policeman's Helmet Ridge, on cliff, south aspect (-DB), 8 000 ft., 18/7/1964, *Esterhuysen 30249* (BOL); Royal Natal National Park, Policeman's Helmet Ridge, Oct. 1976, J. Scotcher s.n.

(NBG 110, 236); Royal Natal National Park, above Policeman's Helmet Ridge on vertical cliffs of south-east aspect facing Tugela Gorge, on the ridge leading to The Witches, 7 600 ft., 4/4/1978, *Rourke 1635* (NBG, PRE, NU, J, BOL, K, MO, S).

Protea piscina Rourke, sp. nov.; fruticulus nanus caespitosus; foliis scabris, acicularibus—canaliculatis vel linearibus, 15–30 cm longis, 2–5 mm latis, bracteis luteis vel subroseis indumento albo sericeo, distinguitur.

Fruticulus nanus caespitosus, 1 m in diam., 300 mm altus. *Caules* ramosissimi, subterranei, 3–8 mm in diam., glabri, folia in caespites terminales gerentes. *Folia* acicularia—canaliculata vel linearia—plana, 150–300 mm longa, 2–5 mm lata, scabra, pubescentia dum immatura sed mox glabra; apices cuspidati. *Inflorescentiae* obconicae—turbinatae, 35–50 mm longae, 40–50 mm in diam. *Receptaculum* late conicum, depressum, 5–15 mm latum, 5–10 mm altum. *Bracteeae involucales* 4–5 seriatæ, luteae vel subroseae, indumentum sericeum, album; series externa ovata acuta, 5–7 mm lata, 7–10 mm longa; series intima, oblonga—linearia, 20–35 mm longa, 2–5 mm lata, apices rotundatos concavos. *Perianthium* 30–35 mm longum; tubus glaber, quadrangulatus, 8–10 mm longus; Ungues dense lanati; limbi lineares acuminati, lanati. *Stylus* 30–35 mm longus, arcuatus adaxialis. *Stigma* peranguste lineare, 5–7 mm longum.

Dwarf, tufted shrublet, forming clumps or mats to 1 m in diam., 300 mm in height. *Stems* subterranean, highly divaricate, 3–8 mm in diam., glabrous, producing terminal tufts of leaves at ground level; new shoots regenerate from subterranean stems after burning. *Leaves* acicular—canaliculate to linear and flat, 150–300 mm long, 2–5 mm wide; scabrous, margins horny, apices sharply cuspidate to uncinata; pubescent when young, soon glabrous but occasionally with some pubescence remaining, particularly in the petiolar region. *Inflorescences* obconic, turbinate, 35–50 mm long, 40–50 mm in diam. *Involucral receptacle* broadly conic, depressed, 5–15 mm wide, 5–10 mm high. *Involucral bracts* 4–5 seriate, pale yellow, occasionally flushed with pink; outer series ovate acute, 5–7 mm wide, 7–10 mm long, margins ciliate; inner series oblong—linear, 20–35 mm long, 2–5 mm wide, apices concave, rounded; covered with a soft, white, sparsely sericeous indumentum. *Perianth* 30–35 mm long, straight to slightly adaxially arcuate; tube region glabrous, quadrangular, winged, 8–10 mm long, inner surface slightly pubescent distally; claws slender, densely lanate with a shaggy white indumentum, occasionally interspersed with tawny trichomes; limbs 10 mm long, linear, markedly acuminate, with a white lanate indumentum. *Style* slightly adaxially arcuate, tapering terminally, 30–35 mm long, occasionally puberulous proximally. *Pollen presenter* simple, linear, acute, scarcely differentiated from style, 5–7 mm long. *Ovary* 3–5 mm long, obconic, covered with long, straight tawny trichomes. *Hypogynous scales* lanceolate acute, 2 mm long.

Type: Upper Olifants River Valley, between Visgat and Bollemakiesiekloof, Dec., *Rourke 1506* (NBG, holotype; BOL, PRE, K, MO, S, M, isotypes).

Although clearly allied to *P. scabra* R. Br., which is characterised by the presence of a rusty brown indumentum on the involucre bracts, *P. piscina* is distinguished by the pale yellow (very rarely pink-flushed) involucre bracts covered with a soft white, sericeous, indumentum, and the acicular—canalicate to linear leaves, 150–300 mm long, 2–5 mm wide. At no point do the areas of distribution of the two species overlap. *P. piscina* is distributed to the north and east of the range of *P. scabra*; from the Cedarberg to the Cold Bokkeveld and Piketberg and with the extreme easterly populations occurring from Swellendam along the southern foothills of the Langeberg, to Platteklouf.

SPECIMENS EXAMINED

CAPE PROVINCE—3218 (Clanwilliam): Piketberg, top of Versveld's Pass (-DC), March, *Paterson-Jones s.n.* (NBG 93932); Piketberg mountain, southeast of town, Dec., *H. C. Taylor 4479* (NBG, STE); Piketberg mountain (-DD), Feb., *van der Westhuizen s.n.* (BOL); Kafferskloof Farm Jan., *Summers s.n.* (NBG 85502).

—3219 (Wuppertal): Grootberg, Clanwilliam, southwest slopes (-AC), Dec., *Esterhuysen 4191* (BOL); top of Olifants river mountains, behind Warmbaths (-CA), Sept., *Stephens 6910* (BOL); Skoongesig, (-CC), Nov., *Hanekom 530* (PRE); Grootfontein, Olifantsriver valley, Sept., *Oliver 3986* (STE); hills a mile southeast of Keerom, Nov., *Pillans 8775* (BOL).

—3319 (Worcester): Plateau of Skurfdeberg between Olifants and Kromme river (-AA), Dec., *Andreae 197* (PRE, STE); road between Rosendalfontein and Visgat, Nov., *Pillans 9642* (BOL); Olifants river valley, Onderboskloof, Jan., *Esterhuysen 14296* (BOL); Upper Olifants river valley between Visgat and Bollemakiesiekloof, Dec., *Rourke 1506* (NBG, BOL, PRE, K, MO, S, M); top of Gydo Pass (-AB), July, *Markötter s.n.* (STE 19382); Witzenberg, top and eastern slopes (-AC), Dec., *Andreae 155* (PRE).

—3420 (Bredasdorp): Swellendam (-AB), June, *Harold Fry s.n. 4985* in herb. Galpin (BOL, SAM, PRE); hill close to Swellendam just north of town, Oct., *Marloth 7957* (PRE); Langeberg, near Swellendam, Sept., *Muir 2752 & 2753* (PRE); hill southeast of Swellendam on road to Bontebok Park, Nov., *Williams 1727* (NBG); below the Crown mountain, Swellendam, Aug., *Wurts 270* (NBG); hills at Voormansbosch (-BA), Sept., *Zeyher 3671* (SAM); In lat. mont. pr. Swellendam, *Niven s.n.* (K); Bontebok Park, Feb., *Grobler 601* (STE).

—3320 (Montagu): Buffelsjagtsrivier at Sparrbosch (-DC), 30/7/1831, *Drège 3364* (P).

—3321 (Ladismith): Platteklouf, near Riversdale (-CC), Oct., *Dekenah s.n.* (NBG 95694).

Protea inopina Rourke, sp. nov.; a *P. arborea* Houtt., bracteis dense ferrugineis velutinis et habitu humilis, caulibus simplicibus (raro ramosis) ad 1 m altis caudice exorienti, distinguendus.

Frutex humilis, ad 1 m altus. *Caules* simplices (raro ramosi), 10–12 mm in diam., glabri, caudice exorienti. *Folia* elliptica vel late oblanceolata 120–180 mm longa, 25–50 mm lata, glabra, glauca, cartilaginea vel coriacea. *Bractea* 5–7 seriatæ, dense velutinæ ferruginiæ, præter seriem intimam partialem pubescentiæ. *Perianthium* 80–90 mm longum; tubus glaber, 10 mm longus, porcatus; ungues tenues, glabri; limbi 30 mm longi, crassi, tomentosi vel lanati. *Stylus* 80–90 mm longus, leviter arcuatus. *Stigma* 15–20 mm longum, tenue. *Ovarium* obovoideum, 3–5 mm longum, trichomatibus fulvis vestitis.

Low, multiple-stemmed shrub 0.5 to 1 m in height, the stems arising from a woody subterranean rootstock. *Stems* erect, glabrous, 10–12 mm in diam., simple to occasionally branched, more usually simple. *Leaves* elliptic to broadly oblanceolate, 120–180 mm long, 25–50 mm wide, glabrous, glaucous, cartilaginous to coriaceous in texture, sessile, but frequently twisted in petiolar region. *Inflorescence* globose to spherical in bud, becoming elongate before anthesis with the perianths projecting 30–50 mm beyond the involucre bracts prior to anthesis, becoming ovoid when fully open, 100–120 mm in diam.; substipitate to stipitate, stipe to 30 mm long. *Involucral receptacle* prominent, conic-acute, 40–45 mm wide, 20–30 mm high. *Involucral bracts* 5–7 seriate, covered with a densely velutinous, ferruginous indumentum in bud stage; outer series ovate acute, tightly imbricate, 10–15 mm wide, 10–20 mm long, covered with a densely velutinous ferruginous indumentum; inner series broadly ovate to ovate—oblong, obtuse, 15–25 mm wide, 20–25 mm long, with a ferruginous indumentum towards apex and midrib, otherwise glabrescent, pale green. *Perianth* 80–90 mm long, tube 10 mm long, prominently ridged, glabrous but minutely puberulous along inner margin of tube lip; claws slender, glabrous; limbs stout, 30 mm long with a densely tomentose to lanate white indumentum, except on the adaxial limb, apices incurved very acuminate, densely lanate. *Anthers* 4, linear, subsessile, 20 mm long, apical boss green, sagittate. *Style* 80–90 mm long, adaxially arcuate, glabrous, tapering terminally. *Pollen presenter* 15–20 mm long, slender, linear, not clearly differentiated from style. *Ovary* obovoid, 3–5 mm long covered with a small tuft of straight tawny trichomes. *Hypogynous scales* 1.5 mm long, narrowly and obliquely ovate. *Fruits* large, ovoid 10–12 mm long 6–7 mm wide, nut-like.

Type: Bergvlei mountains, east of Paleisheuvel, between Bergvlei-se-Berg and Pretoriuskran, above the farm Mieliedraai, 27/9/1977, J. P. Rourke 1619 (NBG, holo.!, PRE, STE, BOL, MO, K, S, L, iso.!).

P. inopina is distinguished by the densely ferruginous, velutinous pubescence on the involucral bracts (particularly in the bud stages) and by the dwarf growth habit with simple (only very rarely branched) stems up to 1 m in height arising from a persistent rootstock. Another significant diagnostic feature of this species is the inordinately large size of the fruits. Ovoid in form, 10–12 mm long and 6–8

mm in diameter they are three times the size of the fruits in *P. arborea*. Together with those of *P. magnifica*, they are the largest fruits recorded in *Protea*.

SPECIMENS EXAMINED

CAPE—3218 (Clanwilliam): Bergvlei Mountains, east of Paleisheuvel, between Bergvlei-Se-Berg and Pretoriuskrans, above the farm Mieliedraai (-DB), 27/9/1977, *Rourke 1619* (NBG, PRE, STE, K, BOL, MO, S, L); on the farm Wilgerbosdrif, Olifants Rivier Mountains, about 13 miles northwest of Piekennierskloof Pass, *M. Schonken s.n.* (STE 30939); Citrusdal area, 10/11/1966, *M. Vogts s.n.* (NBG 85255).

***Protea longiflora* Lam. ssp. *potbergensis* Rourke, ssp. nov.**

Frutex vel arbor parva, ad 4 m alta. *Folia* ovata vel late ovata, basibus cordatis; velutina, postea glabrescentia; 60–90 mm longa, 45–65 mm lata, sed decrescentia (35 mm longa, 25 mm lata), ad apicem caulis. *Stylus* 110–130 mm longus.

Shrub or small tree to 4 m. *Leaves* ovate to broadly ovate, cordate at base, velutinous at first becoming glabrous about a year later, margins thickly ciliate; lower leaves 60–90 mm long, 45–65 mm wide, decreasing in size towards shoot apex to 35 mm long and 25 mm wide. *Style* 110–130 mm long.

Type: Potberg, south slopes near Hamerkop, flowering in hort. J. P. Rourke 25/5/1976, *Rourke 273* (NBG, holo.; PRE, BOL, K, MO, S, iso.)

Apparently confined to the Potberg and adjacent coastal flats, this subspecies is distinguished by its large, ovate to broadly ovate leaves, velutinous initially with thickly ciliate margins.

SPECIMENS EXAMINED

CAPE—3420 (Bredasdorp): Potberg, south slopes near Hamerkop (-BC), fld. in hort. J. P. Rourke 25/5/1976, *Rourke 273* (NBG, PRE, BOL, K, MO, S); Mr Michlers farm, south end of Potberg, Dec. (in fruit), *Williams 629* (NBG); Middle south slope of the Potberg, margin of a stream, Oct. 1940, *Pillans 9382* (BOL).

***Protea roupelliae* Meisn. ssp. *hamiltonii* Beard ex Rourke, ssp. nov.; a habitu nano prostrato, distinguitur.**

Fruticulus procumbens, maxime divaricatus ad 300 mm altus, teges caespitosa ad 1 m in diam. formans; caule principali singulari. *Rami* crassi, horizontaliter effusi. *Inflorescentia* et flos characteres ut in sub-speciem typicam.

Low, procumbent, highly divaricate shrublet to 300 mm in height, forming a tufted mat to 1 m in diam.; with a single main stem. *Branches* stout, short, sprawling horizontally along ground. *Inflorescence* and floral characters as in typical subspecies.

Type: Wartberg, Nelshoogte Forest Reserve, 30/1/1975, Rourke 1467 (NBG, holo.; PRE, K, MO, iso.).

This extraordinary local race of *P. roupelliae* was discovered by Dr P. D. Hamilton of Barberton early in 1957. He showed the populations to Dr J. S. Beard who proposed that it be named *P. roupelliae* var. *hamiltonii*, although no formal description was ever published. It appears that Beard referred to this local race as *P. roupelliae* var. *hamiltonii* in correspondence with the Botanical Research Institute, Pretoria, but he did not affix a manuscript name to any herbarium specimens. Moreover, for several years plants have been offered for sale by a well-known firm of *Protea* growers in Cape Town under this *nomen nudum*. Beard's proposed epithet is here adopted and validated although it is considered that subspecific rank is more appropriate for this dwarf race of *P. roupelliae* on account of its morphological and geographical distinctness.

SPECIMENS EXAMINED

TRANSVAAL—2530 (Lydenburg): Nelshoogte Plateau (-DD), Dec., *P. D. Hamilton s.n.* No. 1525 in herb. Beard (NU); Nelshoogte Plateau, Aug., *P. D. Hamilton s.n.* No. 1024 in herb. Beard (NU); Nelshoogte, a small creeping plant, *P. D. Hamilton s.n.* No. 985a, in herb. Beard (NU); Nelshoogte Plateau, March, J. S. Beard 880 (NU); Dr. Hamilton Nature Reserve, Nelshoogte (-DB), Dec., Muller 2127 (PRE); Dr Hamilton Protea Reserve, Jambila Forest Reserve, Nov., Edwards 4127 (PRE); Wartberg, Nelshoogte Forest Reserve, Jan., Rourke 1467 (NBG, PRE, K, MO).

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